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Special Exercises FOR Spinal Deformities

BY WILLIAM M. BEMUS, M. D.
Consulting Surgeon to Sister's Hospital, Buffalo, N. Y.

THERE are a large number of diseases and deformities which can be greatly benefited by a proper course of physical exercise, by suitable massage and manipulation added, in cases of spinal disease. It is the object of this paper to treat upon the proper and special exercises, which are suitable in cases of disease and deformity of the spine and the soft tissues lying about it.

Just at this time there seems to be a craze for physical culture and some people have become fanatics on the subject. Of course serious harm can be done by improper methods and exercises, especially with persons afflicted with disease of the spine and symptoms growing out of this condition. There are a great many different courses of instruction in physical culture offered at the present time; but none of them deals with exercises in a way particularly beneficial to spinal trouble. These exercises are therefore valueless to us who desire to benefit our patients suffering from this condition. Of course, we all realize how important expert instruction and exercise, proper massage and proper spinal support is to a large

number of our patients suffering from spinal trouble, as I believe that careful statistics show that thirty per cent of the population is afflicted with curvature of the spine in a lesser or greater degree. That much benefit can result by means of providing the patient with proper exercise and suitable support in these cases goes without saying.

For a moment I desire to touch upon the subject of occupation in spinal deflection and the conditions of life and body which predispose to it. All authorities are agreed that posture is the first cause of spinal curvature, though of course injuries and a poor condition of the general health are factors in its production and are important. Any occupation which causes a bending of the head or body more to one side than the other predisposes to it; as in a child with one eye weaker than the other bending of the head results in order that the child may see the writing it is doing; or if a desk is too high or a chair too low; or with workmen carrying a load constantly in one hand, on one shoulder, etc.; motormen, engine-drivers and some other occupations in which malposture and jarring of the body take place; with piano-players and book-keepers; and various other occupations also predispose to it. Gould advises that teachers should be instructed in the correct posture to be maintained. A member of the medical profession should be employed to instruct teachers in this regard. School boards, furniture makers and parents should have their attention called to the fact that children differ in size, even at the same age; and that they often outgrow the sort of seat or school desk that should conform to their size. They should also see that the light falls upon the desk at the right angle and

all children should have their eyes examined by a competent oculist before attending school. If this precaution is neglected the curvature will grow worse instead of better so long as a proper position is not maintained and if curative gymnastic exercises, massage and support be not employed to prevent further trouble and restore the proper muscular tone and strength to the spine. So much can be done in the early stage, and delay in proper exercises and support work such incalculable harm to the growing child or young adult, that no expense should be spared to make an early diagnosis and get the proper treatment.

Of course all cases of spinal curvature begin very insidiously, and as I have indicated it may grow as a result of bending of the spine forward or backward, sideways or to the right or left. This position being maintained too long causes undue pressure upon the bodies of the vertebræ and produces the deformity. If the patient has a tendency toward tuberculosis, caries of the spine may result. The attention of the parent or teacher being called to the condition of the spine or, as is often the case, the lesion being discovered by a dressmaker or tailor, the physician is then called upon and I would advise that a most careful examination be made of the spinal column.

We are often called upon to make an examination of a patient at the office when we are hurried and neglect a careful examination. We should not glance at the case hurriedly and say there is nothing the matter with the spine, or that it will grow out of the trouble. The child should be stripped, should be allowed to stand in its natural position, giving it time to accustom itself to its surroundings and allow the

muscles to relax. In a few moments the drooping of one shoulder will be noticed, and the space between the arms and the body will not be the same on both sides. When first taken into the presence of a physician, children very often hold themselves erect for a few moments, but after the first feeling of strangeness has worn off, the muscles grow a little tired and they will allow themselves to drop into the position which they naturally assume at home and then and not until then is a slight deformity apparent.

The examiner should allow the child to stand in front of him, holding its legs between his knees and while its knees are straight let it bend forward and try to touch the floor with its fingers. In this position the shoulder-blades fall forward and the contour of the back becomes visible so that a slight degree of rotation is thus perceptible, which has escaped observation while the child was in an upright position. This rotation is even more perceptible to the hand than to the eye. In a certain number of cases it will be found that the starting point of lateral curvature is a deformity of the last lumbar and first sacral vertebrae and that the spine bends constantly to the right or the left, at the lumbosacral junction, and one will often find tenderness on pressure at this point.

In some cases the deformity is more apparent in front than in the back. The prominence of one hip or the drooping of one shoulder may be the most prominent feature. The prominence of one hip is often so marked that the flesh at times sinks in quite sharply above the iliac crest, although the deformity in the back may be scarcely noticed.

Among the earliest evidences of rotation is the inequality which almost always exists

in the distance from the navel to the nipples. This is frequently observed before any marked change in the back has taken place. We also find that the breast on the side of the convexity is smaller than that on the side of the concavity. I am lead to these remarks because so many cases of lateral curvature have resulted, when the mothers have thought they noticed an inequality in the two sides of the child when it was still young, and that upon consulting a physician they were told that the child would outgrow it. I cannot but feel that I must strongly impress upon the profession the necessity of observing these cases more closely, and especially the importance of taking proper measures to straighten these incipient curves as early as possible. We all know that a child will not grow out of a curve in the spine, but will rather grow into it, and that even the slightest scoliosis will in time produce decided change in the ribs and vertebræ and that it will be impossible to ever wholly rectify the deformity unless we take time by the forelock and correct it by suitable exercise and support.

While I have mentioned lateral curvature, the same test applies to all other forms of curvature. Care should be taken to ascertain if there be an anterior curve, as this deformity frequently escapes notice. It is usually found in the region of the lumbar vertebræ, the patient appearing "hollow-backed." On the contrary the posterior or outward curvature is common to any portion of the spine and it is easily discovered. In many cases one or more vertebræ may become slightly misplaced, due to slight traumatism. This condition causes serious trouble, with the symptoms of which we are familiar. We should therefore be very careful to ascertain that every bone is in its natural position, also that no tendon is

displaced, causing symptoms of spinal irritation.

Of course no one set of exercises is suitable for all cases of curvature of the spine. Each case must have individual attention, and while I can indicate in a general way exercises suitable for spinal deflection, each physician will, of course, use his own judgment as to the advisability of using any form of exercise which I shall mention, and select those which are applicable to the case in hand only.

In selecting a series of exercises, the "key-note" position is first obtained. The patient should be well instructed in this, so that it can be assumed at any time. He should stand as erect as possible, with the heels together, as nearly as is comfortable, the toes pointing slightly outward, the weight resting mainly on the balls of the feet. Shoulders and head are thrown slightly backward, the whole body is erect. The hands are now placed on the hips and the trunk stretched upward as far as possible, keeping the shoulders level. The assistant should place his hands under the arm-pits and lift upward, thus helping the patient to further stretch the spine and straighten it. The assistant should then place one hand on the ribs of the convex side, the other on the opposite shoulder; the trunk is now swayed in its relation to the pelvis until the whole figure assumes a better position. The bulging ribs are also compressed by the palm, thus rotating the bodies of the vertebræ as far as possible. The attempt of the patient to maintain this change brings into play the deeper spinal muscles and by much repetition teaches him to voluntarily assume the corrected position.

The projection of the hip on the concave side of the lumbar lateral curvature may be

helped by advancement of the pelvis on this side, causing rotation of the lumbar vertebræ, since by this motion the lower spinal region is affected while the upper remains unchanged. The object of this exercise is to stretch and straighten the weakened muscles, also the contracted ligaments and soft tissues, and straighten the spine; still more to teach the patient to gain and hold a correct attitude while walking, sitting or standing; and it is useful in all cases of lateral curvature, as well as in some forms of anteroposterior curvature, and in irritable spine, the result of pressure on emergent nerves.

It is important to study the normal curves and rotation of the bodies of the vertebræ in the normal spine, in order to understand the occurrence of rotation in lateral curvature and the reason for special exercises to overcome the abnormal condition. In this connection particular attention should be directed to those cases of so-called lateral bending of the spine which occur in all classes and conditions of youth, from general debility, in which the spine, though much deformed laterally, is without rotation of the bodies of the vertebræ. This can usually be restored by attention to his general health, by proper exercises and a light and comfortable spinal appliance which will exert a good degree of longitudinal support without causing muscular atrophy; and this appliance is also very useful in all forms of deviation, because if there be lack of muscle-tone, or true scoliosis, it is indicated.

Dr. Seaver, of Yale, has called the attention of the profession to an appliance made by the Philo Burt Manufacturing Company, at Jamestown, N. Y., which fills the indications mentioned because it is comfortable, adjustable, and gives the

necessary support without undue pressure or causing any loss of muscle-tone. This support can be easily removed for the purpose of making the proper dressings, etc., in cases of Potts's disease.

While on the subject of proper spinal support, in connection with spinal gymnastics, I wish to call attention to the fact that chairs, desks and tables can be made so that they can be changed to fit any individual and that a proper slope of the seat can be obtained. Parents and school boards should see that this is done, and the physician can indicate how it can be done. Cotton has brought this about in certain schools in Boston.

To resume our proper subject, treatment by proper spinal gymnastics: After the "keynote" position has been thoroughly learned by the patient and the correction made, a suspension of the body can be made either by a horizontal bar, trapeze, rings, or by the Sayre suspension apparatus. The patient should be taught to use the suspension thoroughly and at frequent intervals through the day. In using the Sayre apparatus the rope should never be tied but should be held in the hands of the patient, or assistant, as serious accidents have occurred where proper precautions have not been used.

In the mild form of curvature almost any of the following exercises can be readily used; the exercise in each instance being selected according to the locality of the curve. The patient lying on the back, the head should be rotated in all directions, then the arms and then the legs. When the arms are in a position above the shoulders deep breathing should be taken, inhaling; then lowering the hands gradually to the chest and exhalations made. The legs can be brought upward by muscular effort,

first one, then the other, then both to a right angle with the body. The patient should then assume the first, or keynote position, then turn the body to right and left, the head over one shoulder, then over the other, heels and feet maintaining the position.

The lower limbs should be exercised, because often in cases of curvature there is unequal development of the legs and a tipped pelvis, therefore the patient should be taught to exercise the muscles of the lower limbs by placing the hands on the hips and raising on the tiptoes and back to heels several times; assuming a squatting posture, then rising; placing the hands above the shoulders, stretching the arms upward as far as possible, then outward from the shoulders, also backward and downward—all followed by standing in keynote position, and making tense all the muscles throughout the body. Drawing the stomach and abdominal muscles upward by purely muscular effort is important, as there is generally enteroptosis in cases of spinal deflection, which can be benefited by this method.

Particular attention should be paid to the muscles upon the concavity of the lateral curve, as these are the weaker.

In carrying out the treatment the patient should be placed so that the muscular attachments assume a fairly normal position and can be properly developed. The patient must assume the keynote position, then move the right leg forward about three foot lengths, bend the knee, keeping the other knee fully extended, while the trunk is carried over the bent knee. Repeat with left leg. The keynote position being resumed, take the weight of the body on the ball of one foot, swing the other in a circle about it. Repeat with the

other. Now place the palms of the hands against the sides just below the ribs, draw the sides as near as possible then by muscular effort as far apart. The hands on the sides act simply as guides.

Again, with the patient astride a chair, front of body facing back of chair, the attendant standing behind him now places the left hand beneath the left shoulder, slowly lifting it, at the same time depressing the right scapula with the right hand. If the curve is with the convexity to the left this pressure is to be on the left scapula and the lift be made with the right hand.

Other exercises may be taken in the prone position, on the floor, table or firm couch, as lying on the face, the feet held by the assistant, or fixed by a strap. The trunk can be raised to a corrected position. Motions may be made by hands and arms as in swimming; with the right or left sides upon the table the body can be lifted in such a manner as to improve either a right or left scoliosis.

All these exercises can be used to advantage in selected cases and together with massage and the proper spinal support indicated, all those afflicted with scoliosis of the first and second degrees, at least, will be benefited, also many cases of other forms of spinal deflection. No general practitioner has the right to allow any one under his care to become a confirmed cripple by neglect when the remedy is to be obtained by a little attention at the outset of the disease. Many of our patients are not financially able to go to a specialist and we should attend these personally.

The object of this paper is to instruct the general practitioner how to care for cases of curvature, under his own super-

vision, and is not for any man who is already a specialist in orthopedics.

Jamestown, New York.

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There is no good reason why so many of these cases of spinal deformity shall be allowed to progress beyond the remediable stage—and yet many of them do! It is the duty of the practitioner to recognize such conditions early; that they can then be treated successfully, Dr. Bemus has shown us. This is another of those “loose ends” which help to success and which every pyhsician should grasp.—ED.

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